

Application No.: 10/736,605

REMARKS

Elected claim 10 is independent and stands rejected under 35 U.S.C. § 103 as being unpatentable over Kolodzey et al. '538 ("Kolodzey") in view of Sasaki '666 ("Sasaki"). This rejection is respectfully traversed for the following reasons.

Claim 10 recites in pertinent part, "forming a gate electrode *with Schottky characteristic* containing an adhesion enhancing element and *an element other than the adhesion enhancing element* on the thermally oxidized insulating film" (emphasis added). The Examiner admits that Kolodzey does not disclose a gate electrode made of plural materials. Rather, Kolodzey discloses only a gate electrode made of Al or Au and does not include the adhesion enhancing element. Indeed, as described in Applicants' specification, using the conventional electrode material as disclosed in Kolodzey can result in delamination of the gate electrode from a thermal oxide film. In this regard, Kolodzey does not recognize the problem of the gate electrode delaminating from the oxide film nor give any consideration to the adhesion between the oxide film and the gate electrode.

The Examiner relies on Sasaki to obviate the aforementioned deficiencies of Kolodzey. However, Sasaki is related to *ohmic* electrode materials for ohmic-contacting elements such as resistors, varistors and thermistors (col. 1, lines 15-20). Sasaki is not suggestive of using the disclosed materials for gate electrodes. Indeed, as would be understood in the art, Sasaki in effect teaches away from using its disclosed materials as gate electrodes. Specifically, to form an ohmic electrode having good quality, Si components are diffused as wide as possible to improve the adhesion of the ohmic electrode. This desired procedure in Sasaki, however, would lead to a minimization or removal of a potential barrier between the electrode and the

Application No.: 10/736,605

semiconductor film and would therefore cause *loss of a Schottky characteristic*. In other words, by using its disclosed materials of Sasaki, the proposed combination would result in a gate electrode having no Schottky characteristic. A gate electrode having no Schottky characteristic is not a gate electrode, so that there is no motivation to apply the ohmic materials of Sasaki to the gate electrode of Kolodzey. Indeed, as described above, Sasaki teaches away from such the Examiner's modification.

Indeed, only Applicants' specification recognizes the aforementioned problem of delamination and conceived of a manner to obviate said problem. In order to clarify the distinction from the proposed combination of prior art, claim 10 now embodies a gate electrode with Schottky characteristic to emphasis the non-compatibility of the gate electrode of Kolodzey with the teachings related to the ohmic electrodes of Sasaki.

The Examiner is directed to MPEP § 2143.03 under the section entitled "All Claim Limitations Must Be Taught or Suggested", which sets forth the applicable standard for establishing obviousness under § 103:

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (citing *In re Royka*, 180 USPQ 580 (CCPA 1974)).

In the instant case, the pending rejection does not "establish *prima facie* obviousness of [the] claimed invention" as recited in claim 10 because the proposed combination fails the "all the claim limitations" standard required under § 103.

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claim 10 is patentable for the reasons

Application No.: 10/736,605

set forth above, it is respectfully submitted that all claims dependent thereon are also patentable. In addition, it is respectfully submitted that the dependent claims are patentable based on their own merits by adding novel and non-obvious features to the combination.

For example, regarding claim 12, the Examiner simply discounts the claimed feature by relying on routine experimentation. However, it is respectfully submitted that the Examiner's reliance on routine experimentation to allege obviousness of the claimed features is in legal error. The "routine experimentation" basis for an obviousness rejection can only be relied upon by the Examiner if the *prior art* first recognizes the modified parameter as a result-effective variable. In the instant case, only Applicants have recognized and considered the importance of the claimed parameters (e.g., thickness) as a result-effective variable, so that the Examiner can not rely on the obviousness-theory of "routine experimentation" as a basis for asserting obviousness thereof.

The Examiner is directed to MPEP § 2144.05(II)(B) under the heading "Only Result-Effective Variables Can Be Optimized", which sets forth the applicable standard for determining result-effective variables:

A particular parameter must first *be recognized* as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. (citing *In re Antonie*, 195 USPQ 6 (CCPA 1977)).

In the instant case, the cited prior art appears to be completely silent regarding thickness, used in the particular combinational structure recited in the claims, as achieving a recognized result (indeed, the Examiner does not reference any portion of the cited prior art for this purpose); so that there is no basis for alleging obviousness thereof based on routine experimentation. Accordingly, it is respectfully submitted that the claimed features would not have been obvious in view of routine experimentation because the cited prior art does not appear to recognize the

Application No.: 10/736,605

claimed parameters, *in the particular combinational structure set forth in the claims*, as achieving a recognized result.

Based on all the foregoing, it is respectfully submitted that all pending claims are patentable over the cited prior art. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 103 be withdrawn.

CONCLUSION

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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